

The site range biases of the worldwide SLR network

V. Luceri

e-GEOS S.p.A., CGS Matera, Italy, cinzia.luceri@telespazio.com

G. Bianco

Agenzia Spaziale Italiana, CGS Matera, Italy, giuseppe.bianco@asi.itnce

The short and long term stability of SLR station range bias is of great interest to data analysts. The ideal SLR station should couple a low and constant value of the range bias to a high ranging precision.

Frequently this is not the case and the analysts should face the problem of biases, in particular, when those are not detected at the stations. The problem is most critical when the biases are highly correlated to other geodetic parameters, i.e. coordinates estimated over short arcs (days, weeks).

The main ILRS standard product is a weekly estimate of site coordinates and Earth Orientation Parameters over a 7-day arc and the presence of a range bias is immediately mapped in the station coordinates, mainly the Up component. A time series obtained from biased measurements can produce a scale inconsistency with respect to another geodetic technique and SLR is very sensitive in this sense. An example of this effect will be presented.

On the other hand, the simultaneous adjustment of biases and coordinates weakens the solution, causing a large scatter in the coordinate time series, and might absorb real geodetic signatures.

A good solution seems to be the application of known biases and biases computed with a long arc solution, over decades.

A bias analysis was performed on Lageos data for all the sites of the ILRS network. The problematic sites were presented together with suggestions for the bias to be applied in the generation of the next ILRS time series which will include past data since the early SLR tracking.